

WE CLAIM :

1. A method of transmitting data, comprising the steps of:
 - transmitting successively on a channel, from a first unit, data blocks destined for a second unit;
 - for at least some of the transmitted data blocks, returning an acknowledgement signal from the second unit to the first unit, indicating whether said transmitted data block has been correctly received;
 - transmitting on said channel, from the first unit, a redundancy block relating to at least some of the data blocks previously transmitted for which a received acknowledgement signal indicates incorrect reception, whereby each transmitted block is accompanied by an identification signal indicating whether said block is a redundancy block;
 - associating, in the first unit, each received acknowledgement signal with a block transmitted in a determined temporal relation with the reception of said acknowledgement signal; and
 - in at least some of the cases of reception of an identification signal inconsistent with an acknowledgement signal previously returned, returning from the second unit to the first unit a restart command signal for restarting transmission of the blocks.
2. A method according to Claim 1, wherein the blocks are transmitted in turn over K subchannels, the first unit comprising K buffer memories for

temporarily storing the data blocks respectively transmitted over the K subchannels, K being a number at least equal to 1 determined in such a way that the acknowledgement signal relating to a data block transmitted over one of the K subchannels is received before the transmission of the next block over said subchannel, said next block being a redundancy block with regard to said data block transmitted in at least some of the cases where the acknowledgement signal received indicates incorrect reception.

- 5 3. A method according to Claim 1, further comprising the step of:
 - 15 - restarting, in the first unit, the transmission of the successive blocks from a data block following a first data block in response to reception of the restart command signal subsequent to a reception by the second unit of an identification signal inconsistent with the acknowledgement signal returned with regard to said first data block.
- 20 4. A method according to Claim 3, wherein the blocks are transmitted in turn over K subchannels, the first unit comprising K buffer memories for temporarily storing the data blocks respectively transmitted over the K subchannels, K being a number at least equal to 1 determined in such a way that the acknowledgement signal relating to a data block transmitted over one of the K subchannels is received before the transmission of the next block over said subchannel, said next block being a redundancy block with regard to said data block transmitted in at least some of the

cases where the acknowledgement signal received indicates incorrect reception,

wherein each of the K buffer memories is dimensioned to contain a single data block,

5 and wherein the data block from which the first unit restarts the transmission in response to the reception of a restart command signal subsequent to the reception by the second unit of an identification signal inconsistent with the acknowledgement signal returned with regard to a first data block transmitted over one of the K 10 subchannels is the last data block transmitted over said channel, obtained from the buffer memory corresponding to said subchannel.

15 5. A method according to Claim 1, further comprising the step of :

- restarting, in the first unit, the transmission of the successive blocks from said first data block, in response to the reception of a 20 restart command signal subsequent to the reception by the second unit of an identification signal inconsistent with the acknowledgement signal returned with regard to a first data block.

25 6. A method according to Claim 5, wherein the blocks are transmitted in turn over K subchannels, the first unit comprising K buffer memories for temporarily storing the data blocks respectively transmitted over the K subchannels, K being a 30 number at least equal to 1 determined in such a way that the acknowledgement signal relating to a data block transmitted over one of the K

subchannels is received before the transmission of
the next block over said subchannel, said next
block being a redundancy block with regard to said
data block transmitted in at least some of the
5 cases where the acknowledgement signal received
indicates incorrect reception,

and wherein each of the K buffer memories is
dimensioned to contain two data blocks transmitted
successively over a subchannel.

10 7. A method according to Claim 1, further comprising
the steps of :

configuring a link between the first and second
units, whereby at least one restart
configuration parameter for the transmission of
15 the blocks is supplied to a command module for
the transmission of the blocks of the first
unit; and

20 - restarting, in the first unit, the transmission
of the successive blocks from a data block
selected as a function of said restart
configuration parameter, in response to the
reception of a restart command signal
subsequent to the reception by the second unit
25 of an identification signal inconsistent with
the acknowledgement signal returned with regard
to a first data block.

30 8. A method according to Claim 7, wherein the blocks
are transmitted in turn over K subchannels, the
first unit comprising K buffer memories for
temporarily storing the data blocks respectively
transmitted over the K subchannels, K being a
number at least equal to 1 determined in such a

way that the acknowledgement signal relating to a data block transmitted over one of the K subchannels is received before the transmission of the next block over said subchannel, said next block being a redundancy block with regard to said data block transmitted in at least some of the cases where the acknowledgement signal received indicates incorrect reception,

wherein said data block from which the first unit restarts the transmission in response to the reception of a restart command signal subsequent to the reception by the second unit of an identification signal inconsistent with the acknowledgement signal returned with regard to a first data block transmitted over one of the K subchannels is obtained from the buffer memory corresponding to said subchannel as being, as a function of the restart configuration parameter, either said first data block or the last data block transmitted over said subchannel.

9. A method according to Claim 1, further comprising the step of :

- returning to the first unit, from the second unit, a restart command signal for the transmission of the blocks in each case of reception of an identification signal inconsistent with an acknowledgement signal previously returned.

10. A method according to Claim 1, wherein the acknowledgement signal and restart command signal are defined by states of an uplink indication addressed by the second unit to the first unit on a control channel.

11. A method according to Claim 10, wherein said uplink indication comprises three states, namely positive acknowledgement, negative acknowledgement and restart command.
- 5 12. A method according to Claim 10, wherein said uplink indication comprises four states, namely positive acknowledgement with no restart command, negative acknowledgement with no restart command, positive acknowledgement with restart command and
10 negative acknowledgement with restart command.
13. A method according to Claim 12, further comprising the step of :
 - restarting, in the first unit, the transmission of the successive blocks from a data block dependent on the type of acknowledgement, in response to the reception of an uplink indication in a state with restart command.
- 15 14. A method according to Claim 10, further comprising the step of:
 - configuring a link between the first and second units, in the course of which at least one format parameter for the restart command signals is supplied to the first and second units,
- 20 25 and wherein said uplink indication has a number of states dependent on said format parameter.
15. A device for transmitting data, comprising:
 - means for transmitting successive data blocks destined for a remote unit; and
 - means for receiving an acknowledgement signal

..... returned by the remote unit and indicating whether a transmitted data block has been correctly received,

5 wherein the means for transmitting blocks are arranged to transmit a redundancy block relating to at least some of the blocks previously transmitted for which the acknowledgement signal received indicates incorrect reception,

10 wherein each acknowledgement signal received is associated with a block transmitted in a determined temporal relation with the reception of said acknowledgement signal,

15 the device further comprising means for transmitting an identification signal accompanying each block transmitted and indicating whether said block is a redundancy block,

20 wherein the means for transmitting blocks are arranged to restart the transmission of the blocks in response to the reception of a restart command signal originating from the remote unit and indicating an inconsistency between an identification signal received and an acknowledgement signal previously returned by the remote unit.

25 16. A device for transmitting data according to Claim 15, wherein the means for transmitting blocks are arranged to transmit the blocks in turn over K subchannels, and comprise K buffer memories for temporarily storing the data blocks respectively transmitted over the K subchannels, K being a number at least equal to 1 determined in such a way that the acknowledgement signal relating to a data block transmitted over one of

the K subchannels is received before the transmission of the next block over said subchannel, said next block being a redundancy block with regard to said data block transmitted in at least some of the cases where the acknowledgement signal received indicates incorrect reception.

5 17. A device for transmitting data according to Claim 15, wherein the means for transmitting blocks are arranged to restart the transmission of the blocks from a data block following a first data block in response to the reception of a restart command signal indicating an inconsistency between an identification signal received and an acknowledgement signal previously returned by the remote unit with regard to said first data block.

10 18. A device for transmitting data according to Claim 17, wherein the means for transmitting blocks are arranged to transmit the blocks in turn over K subchannels, and comprise K buffer memories for temporarily storing the data blocks respectively transmitted over the K subchannels, K being a number at least equal to 1 determined in such a way that the acknowledgement signal relating to a data block transmitted over one of the K subchannels is received before the transmission of the next block over said subchannel, said next block being a redundancy block with regard to said data block transmitted in at least some of the cases where the acknowledgement signal received indicates incorrect reception,

15 and wherein each of the K buffer memories is dimensioned to contain a single data block,

and wherein the data block from which the means
for transmitting blocks restart the transmission
in response to the reception of said restart
command signal is the last data block transmitted
5 over the same subchannel as said first block,
obtained from the buffer memory corresponding to
said subchannel.

19. A device for transmitting data according to Claim
15, wherein the means for transmitting blocks are
10 arranged to restart the transmission of the blocks
from a first data block in response to the
reception of a restart command signal indicating
an inconsistency between an identification signal
15 received and an acknowledgement signal previously
returned by the remote unit with regard to said
first data block.

20. A device for transmitting data according to
Claim 19, wherein the means for transmitting
blocks are arranged to transmit the blocks in turn
over K subchannels, and comprise K buffer memories
20 for temporarily storing the data blocks
respectively transmitted over the K subchannels, K
being a number at least equal to 1 determined in
such a way that the acknowledgement signal
25 relating to a data block transmitted over one of
the K subchannels is received before the
transmission of the next block over said
subchannel, said next block being a redundancy
block with regard to said data block transmitted
30 in at least some of the cases where the
acknowledgement signal received indicates
incorrect reception,

and wherein each one of the K buffer memories is

dimensioned to contain two data blocks transmitted successively over a subchannel.

21. A device for transmitting data according to Claim 15, wherein the restart command signal indicating an inconsistency between a received identification signal and an acknowledgement signal previously returned by the remote unit with regard to a data block further indicates whether the block accompanied by said identification signal has been correctly received, and wherein the means for transmitting blocks are arranged to restart the transmission of the blocks from a first data block in response to the reception of said restart command signal, said first data block being selected in a manner dependent on the fact that the restart command signal indicates or otherwise that the block accompanied by said identification signal has been correctly received.
22. A device for receiving data in the form of data blocks successively transmitted by a remote unit on a channel, comprising means for receiving an identification signal accompanying each block transmitted and indicating whether said block transmitted is a redundancy block, and means for transmitting an acknowledgement signal returned to the remote unit and indicating whether a transmitted data block has been correctly received, a redundancy block being transmitted by the remote unit with regard to each block previously transmitted for which the acknowledgement signal received indicates incorrect reception, the device further comprising means for transmitting a restart command signal

for the transmission of the blocks which is returned to the remote unit in at least some of the cases of reception of an identification signal inconsistent with an acknowledgement signal previously returned to the remote unit.

- 5 23. A device for receiving data according to Claim 22, wherein the means for transmitting the restart command signal are arranged to return to the remote unit a restart command signal for the transmission of the blocks in each case of reception of an identification signal inconsistent with an acknowledgement signal previously returned.
- 10 24. A device for receiving data according to Claim 22, wherein the acknowledgement signal and restart command signal are defined by states of an uplink indication returned to the remote unit via a control channel.
- 15 25. A device for receiving data according to Claim 24, wherein said uplink indication comprises three states, namely positive acknowledgement, negative acknowledgement and restart command.
- 20 26. A device for receiving data according to Claim 24, wherein said uplink indication comprises four states, namely positive acknowledgement with no restart command, negative acknowledgement with no restart command, positive acknowledgement with restart command and negative acknowledgement with restart command.
- 25 30 27. A device for receiving data according to Claim 22, further comprising means for decoding each block

5 received accompanied by an identification signal inconsistent with an acknowledgement signal previously returned, the means for transmitting the restart command signal being arranged to return to the remote unit a restart command signal for the transmission of the blocks further indicating whether said block has been correctly received on completion of the decoding.

- 10 28. A device for receiving data according to Claim 22, further comprising means for decoding each block received accompanied by an identification signal inconsistent with an acknowledgement signal previously returned, the transmission means being arranged to return to the remote unit an acknowledgement signal indicating that the data block transmitted has been correctly received without returning any restart command signal when said block has been correctly received on completion of the decoding.
- 15